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INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification ⁶ :
G01N 27/00, 27/26

A1

(11) International Publication Number: WO 96/04547

(43) International Publication Date: 15 February 1996 (15.02.96)

(21) International Application Number: PCT/US95/09492

(22) International Filing Date: 1 August 1995 (01.08.95)

(30) Priority Data:
08/283,769 1 August 1994 (01.08.94) US(71) Applicant (for all designated States except US): LOCKHEED
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(US).(81) Designated States: AM, AU, BB, BG, BR, BY, CA, CN, CZ,
EE, FI, GE, HU, IS, JP, KG, KP, KR, KZ, LK, LR, LT,
LV, MD, MG, MN, MX, NO, NZ, PL, RO, RU, SG, SI,
SK, TJ, TM, TT, UA, US, UZ, VN, European patent (AT,
BE, CH, DE, DK, ES, FR, GB, GR, IE, IT, LU, MC, NL,
PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN,
ML, MR, NE, SN, TD, TG), ARIPO patent (KE, MW, SD,
SZ, UG).

Published

With international search report.

(54) Title: APPARATUS AND METHOD FOR PERFORMING MICROFLUIDIC MANIPULATIONS FOR CHEMICAL ANALYSIS
AND SYNTHESIS

(57) Abstract

A microchip laboratory system (10) and method provide fluidic manipulations for a variety of applications, including sample injection for microchip chemical separations. The microchip is fabricated using standard photolithographic procedures and chemical wet etching, with the substrate and cover plate joined using direct bonding. Capillary electrophoresis and electrochromatography are performed in channels (26, 28, 30, 32, 34, 36, 38) formed in the substrate. Analytes are loaded into a four-way intersection of channels by electrokinetically pumping the analyte through the intersection (40), followed by a switching of the potentials to force an analyte plug into the separation channel (34).

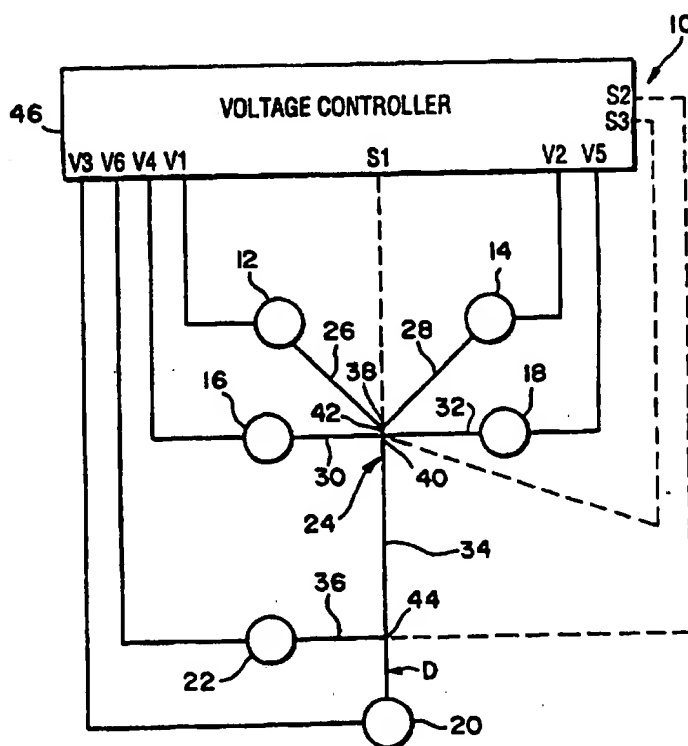


FIG. 1

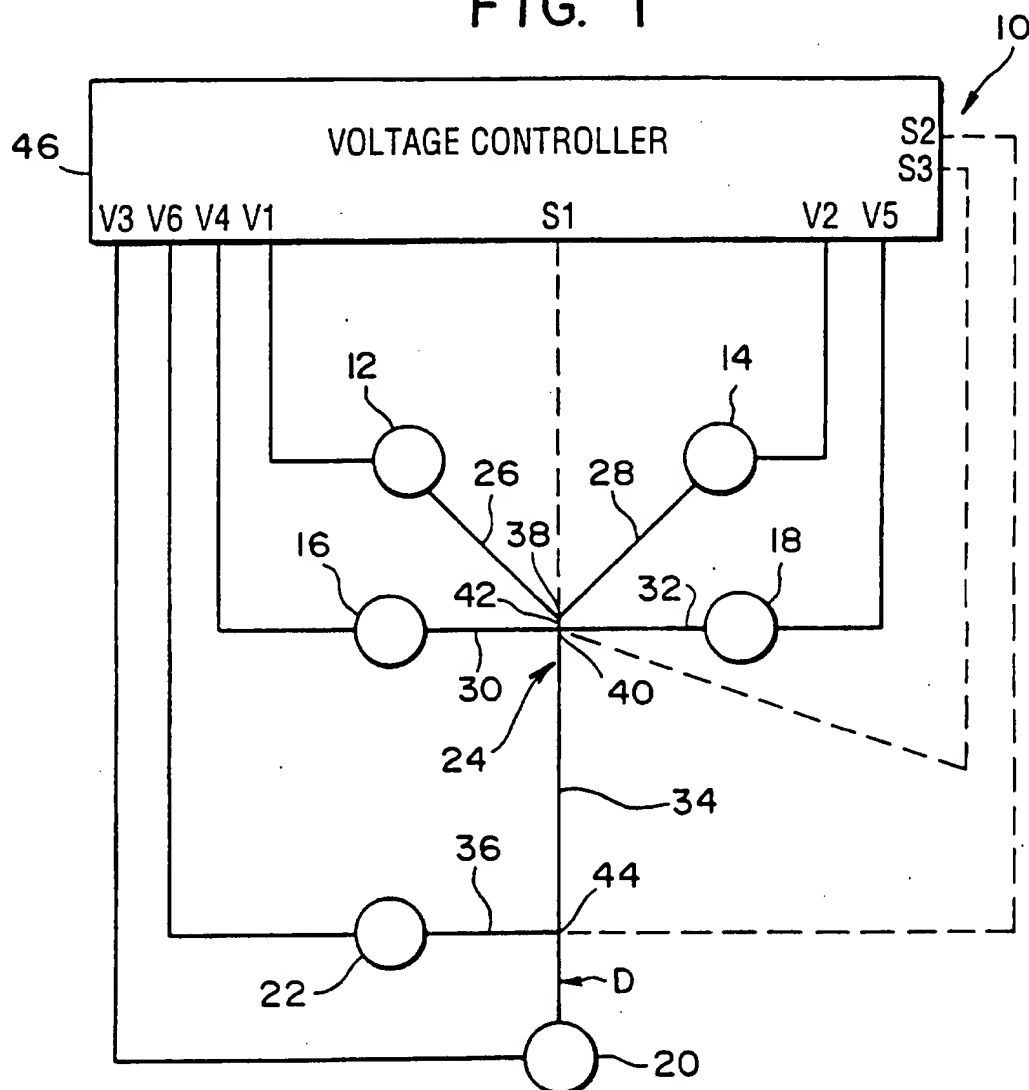


FIG. 2

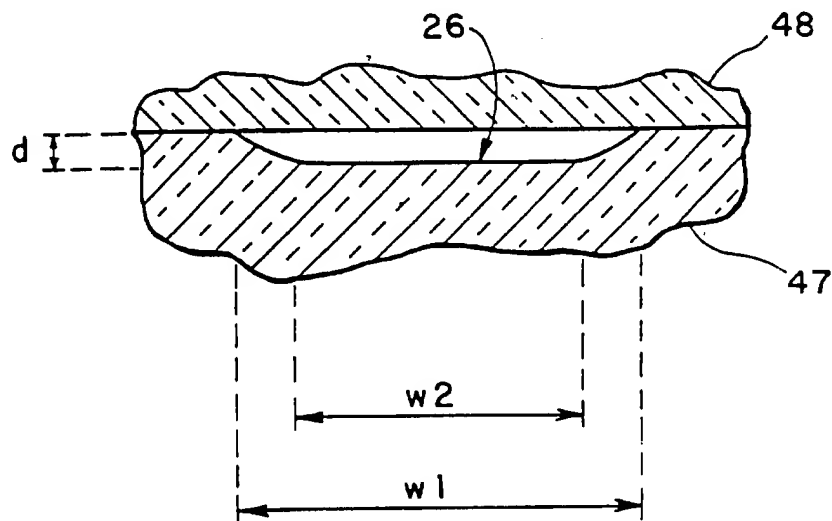


FIG. 3

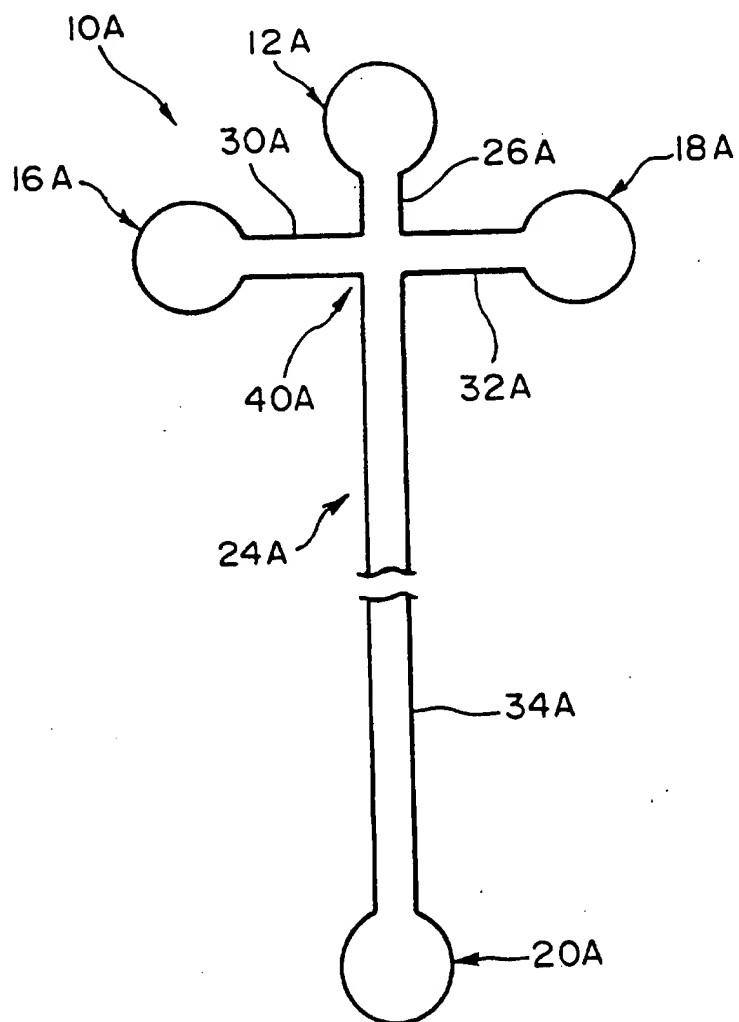


FIG. 4

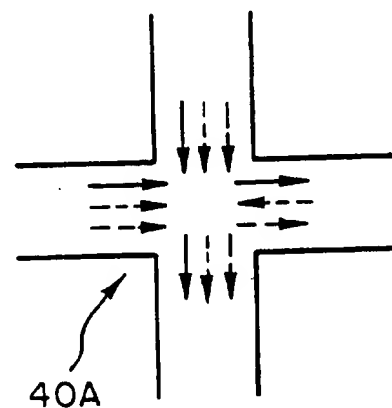


FIG. 5(a) FIG. 5(b) FIG. 5(c)

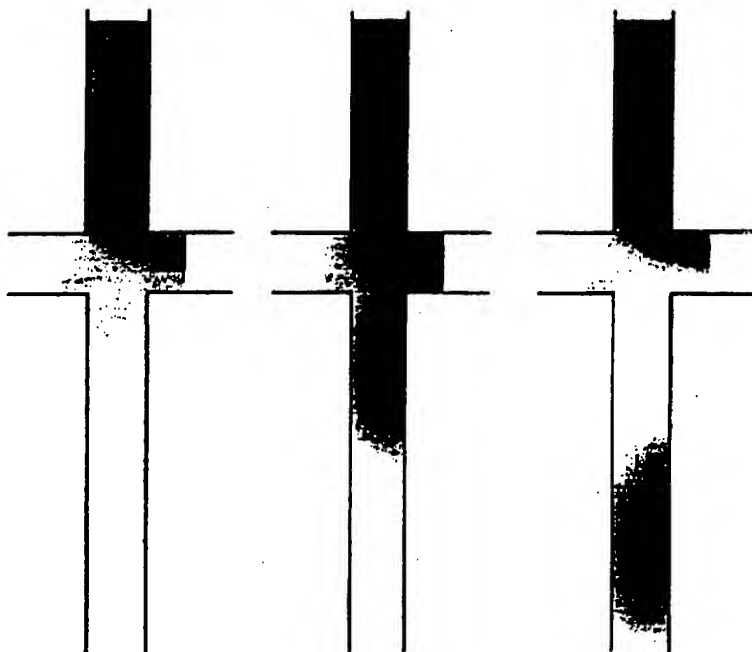


FIG. 7

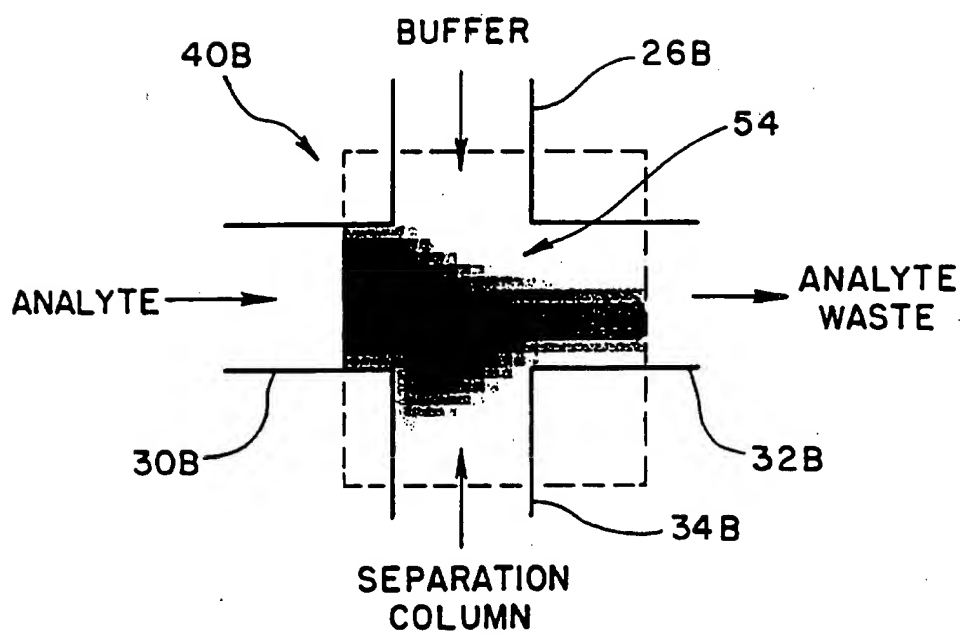
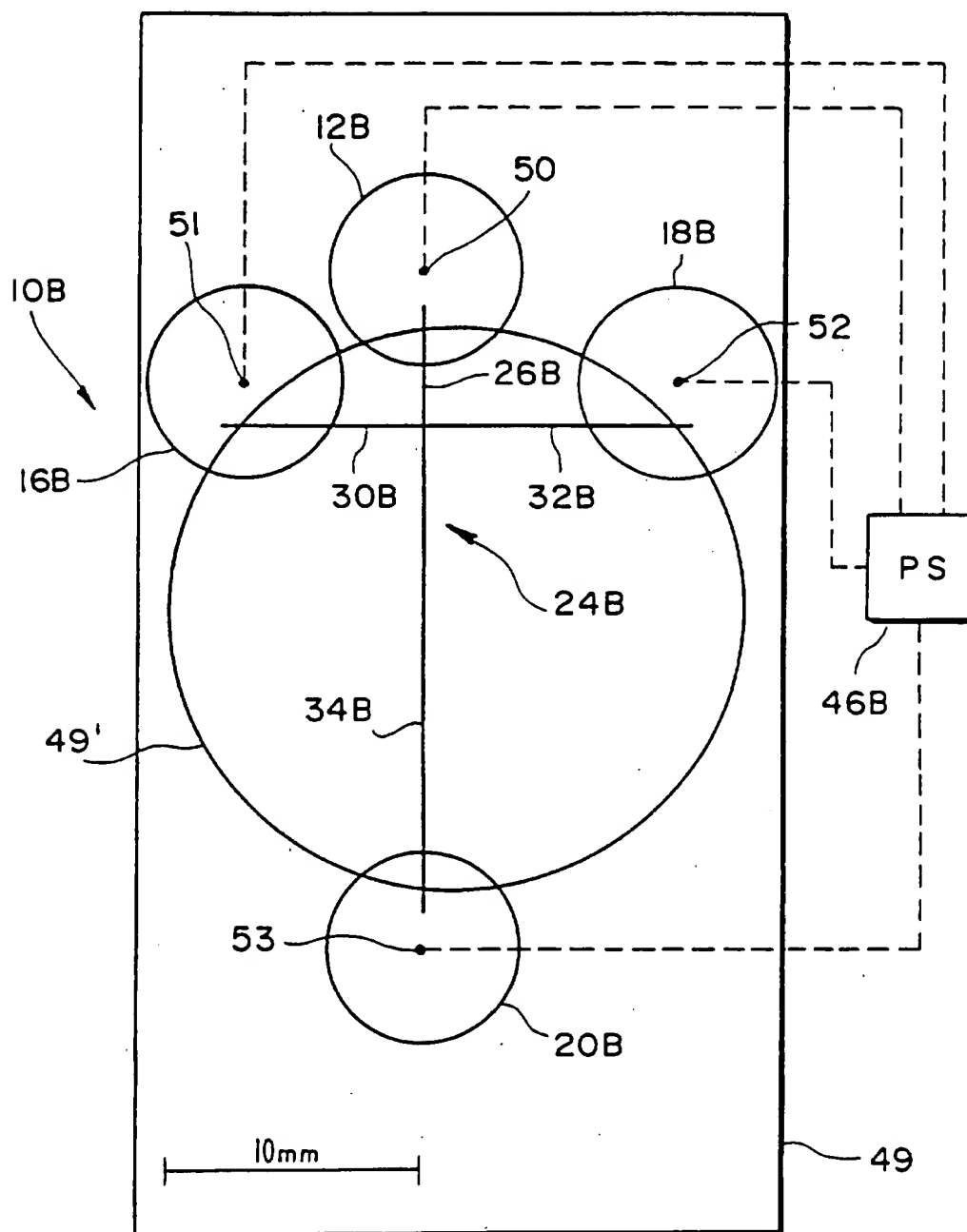


FIG. 6



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FIG. 8(a)

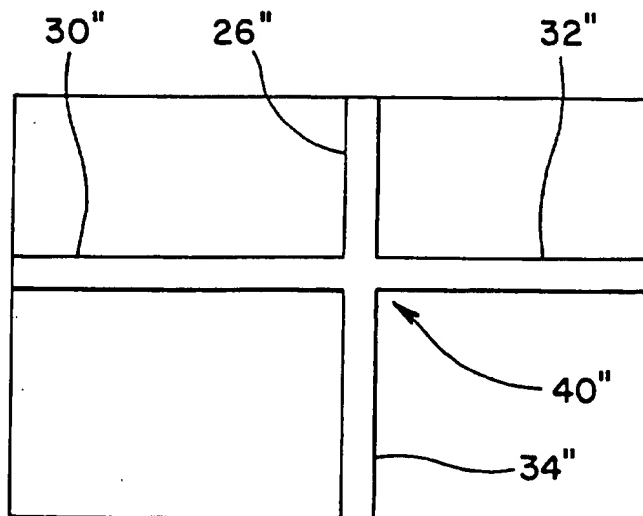


FIG. 8(b)

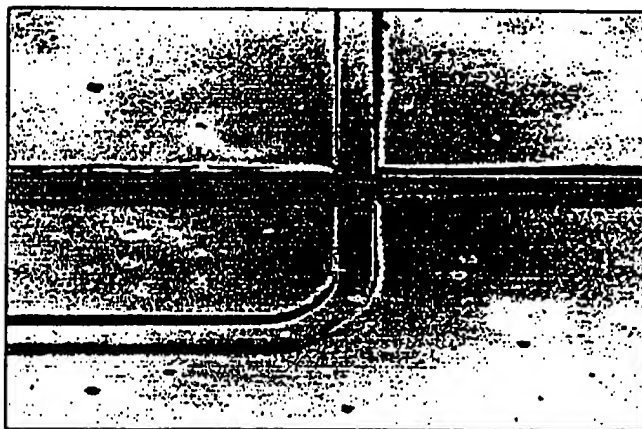
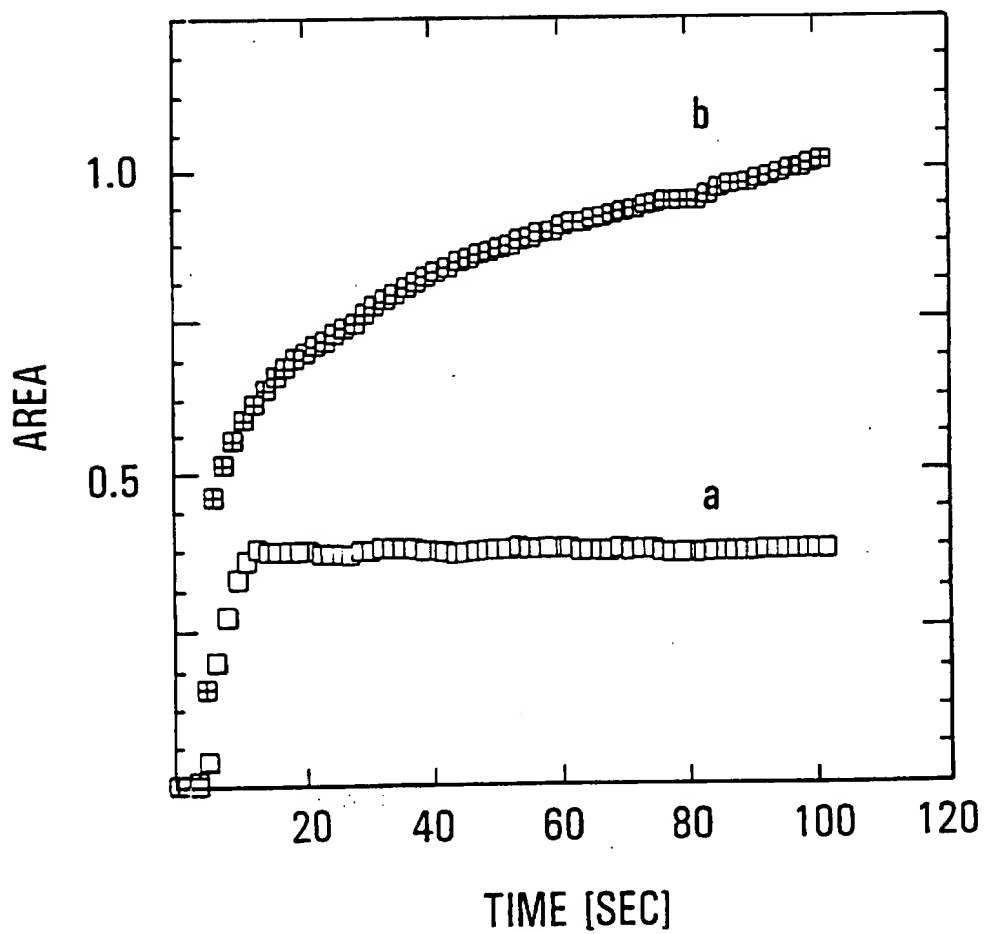


FIG. 8(c)



FIG. 9



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FIG. 10

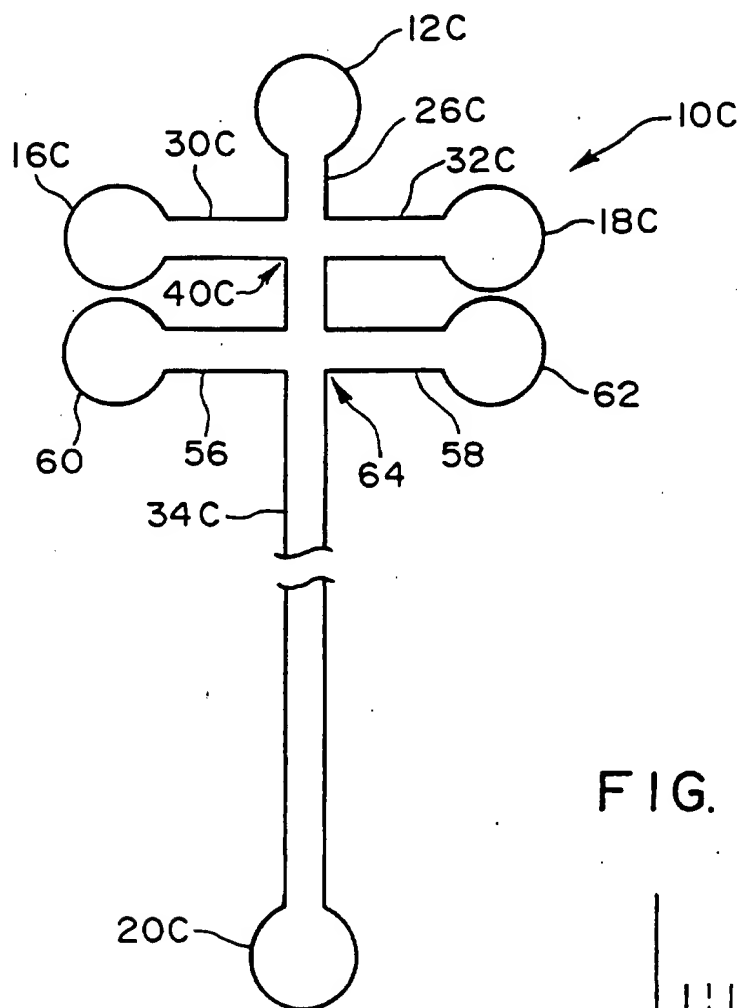


FIG. II

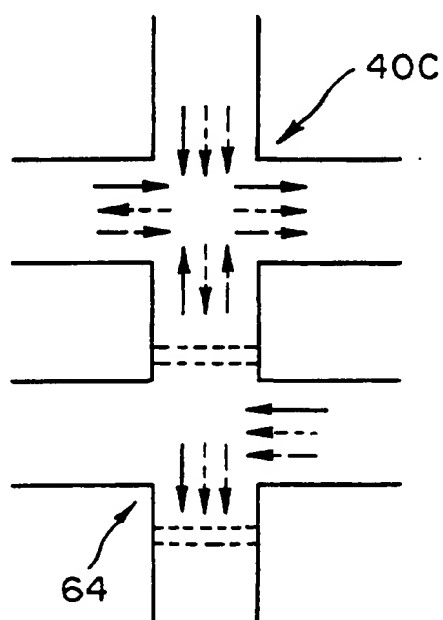
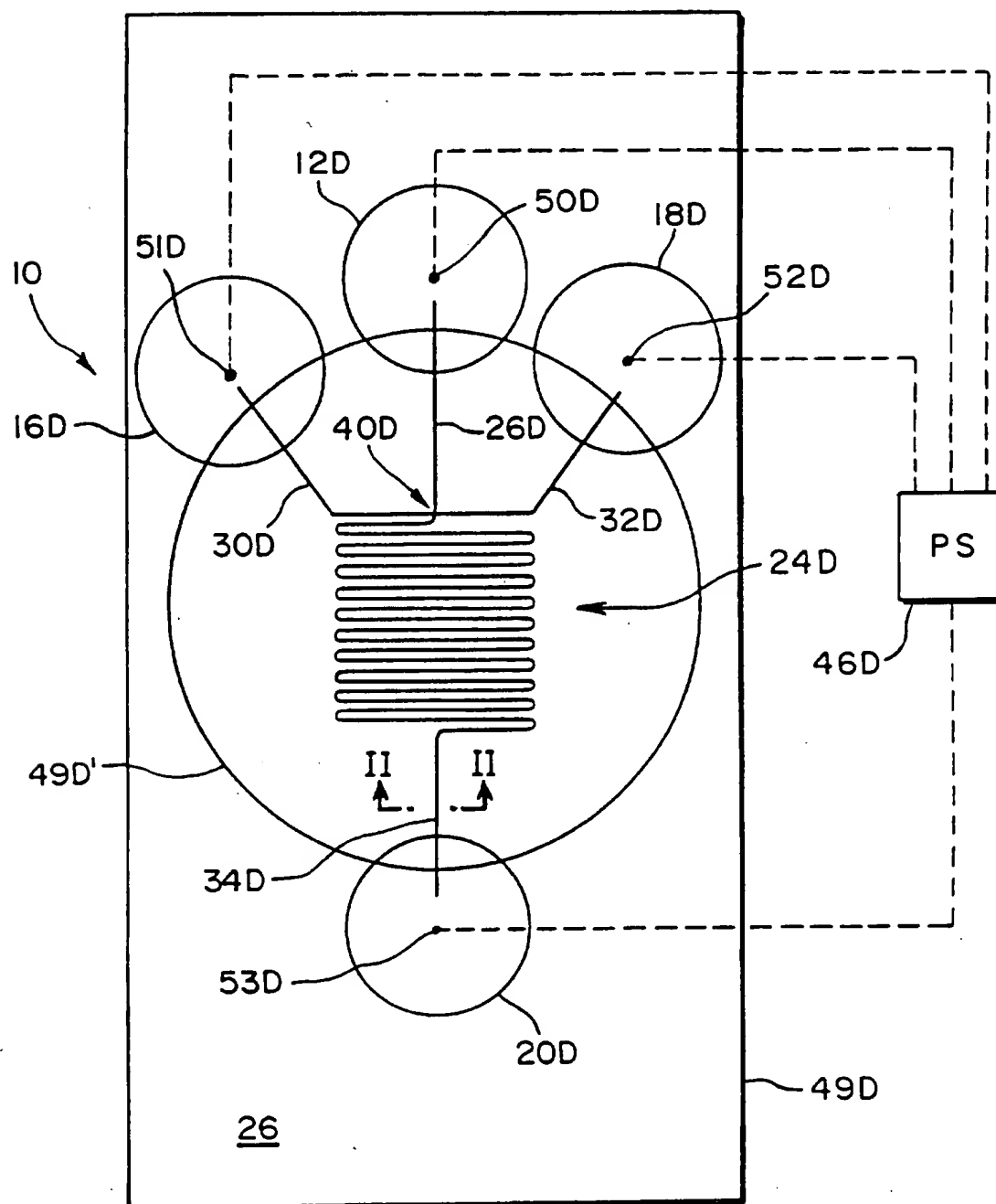


FIG. 12



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FIG. 13(a)

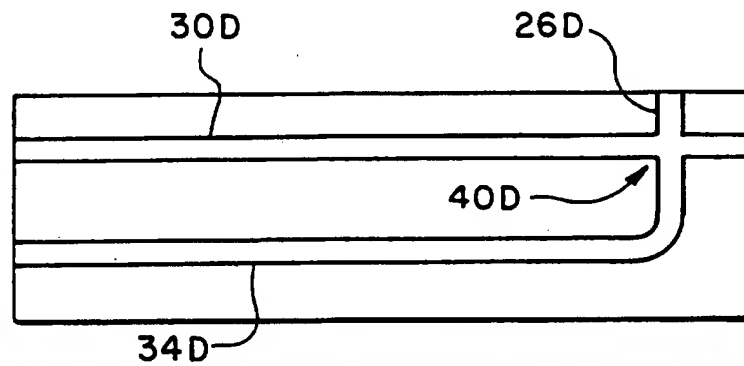


FIG. 13(b)

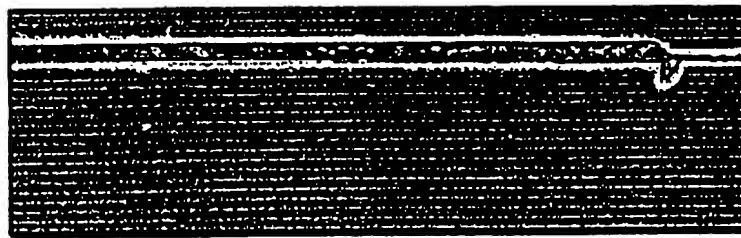


FIG. 13(c)

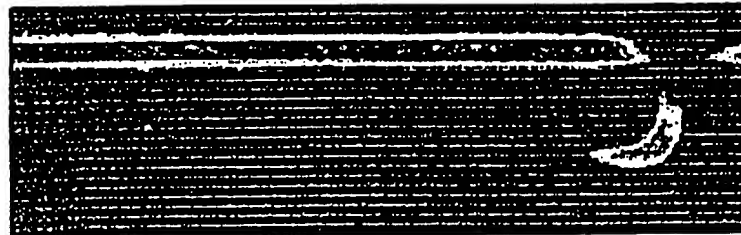


FIG. 13(d)

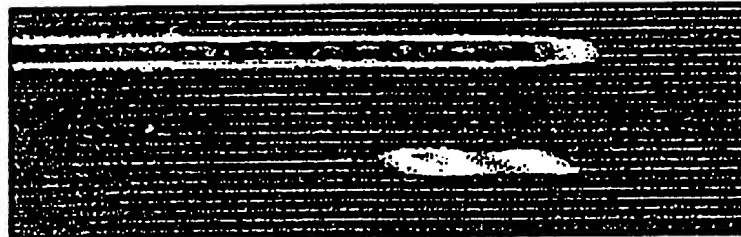
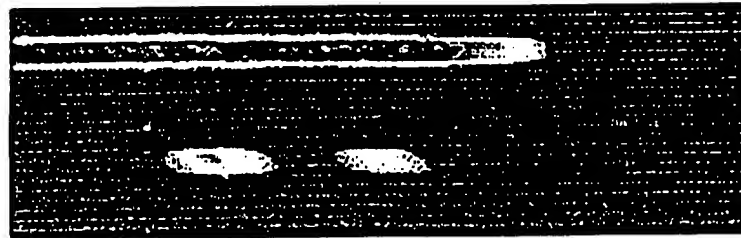


FIG. 13(e)



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FIG. 14

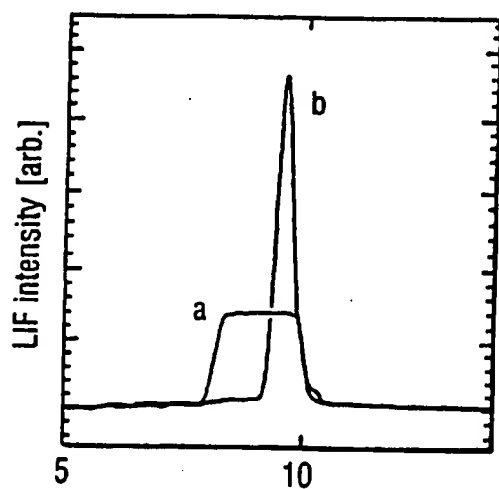


FIG. 15

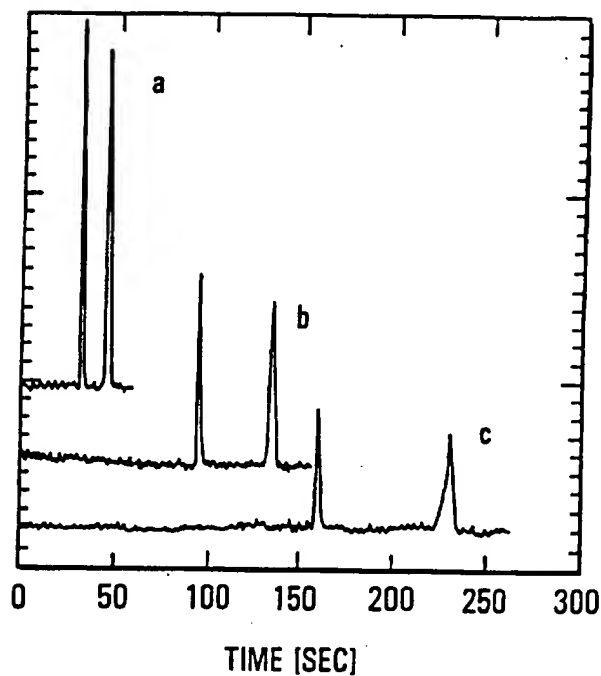
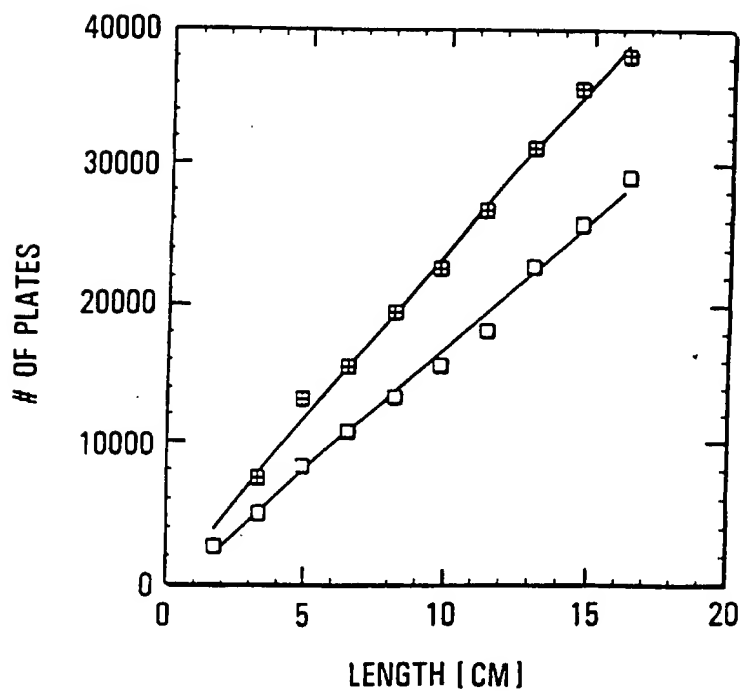


FIG. 16



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FIG. 17(a)

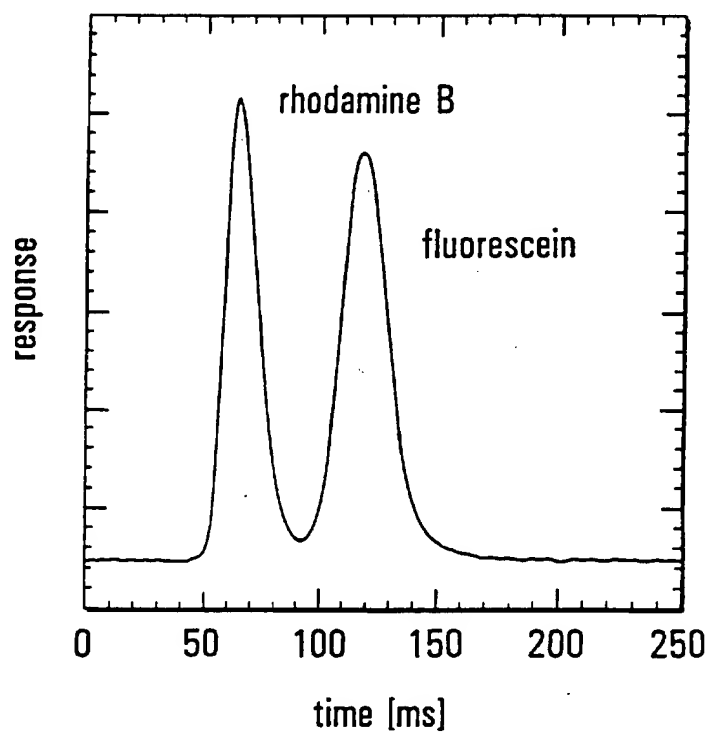


FIG. 17(b)

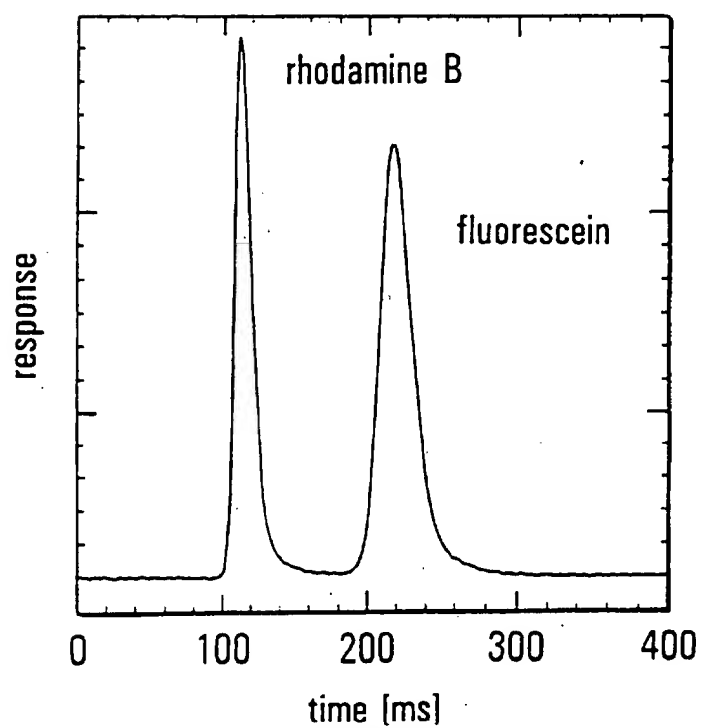


FIG. 17(c)

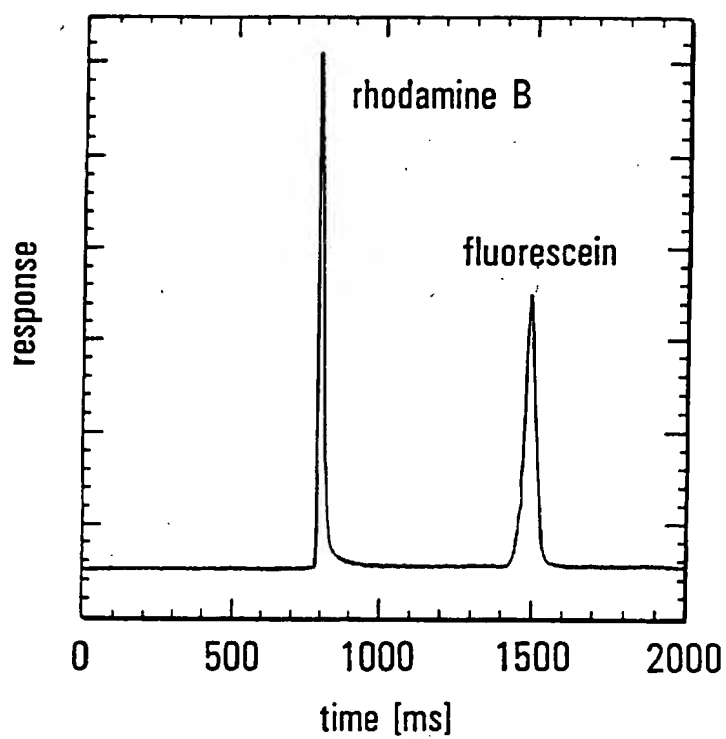


FIG. 18

